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PROGRESS REPORT ON FIELD INVESTIGATIONS IN CHILD HYGIENE IN THE STATE OF MISSOURI TO JUNE 30, 1920.

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In the summer of 1919 a preliminary conference was held between a representative of the United States Public Health Service and a representative of the Missouri State board of health relative to the Federal Government's aiding the State in child hygiene activities. As a result of this conference a letter was written by the acting governor of the State and resolutions were adopted by the State board of health requesting that the United States Public Health Service render assistance in creating a division of child hygiene and give such aid in the project as circumstances would warrant.

The writer was detailed, in October, 1919, to cooperate with the State board of health in investigations in child hygiene and to make a study of the work of the division of child hygiene of the State board of health. Headquarters were established in the offices of the State board of health in the State capitol at Jefferson City.

Purpose of Proposed Investigations.

The United States Public Health Service purposed to carry on field investigations in order to obtain data relative to maternal and infant mortality and to study conditions influencing the mortality rate; to make investigations to insure proper standards for medical inspection of school children, with its attendant follow-up work; health supervision of expectant mothers, infants, and children of preschool age, and the establishment of child health centers; to advise with representative citizens of local communities and stimulate them to provide needed facilities for child health work problems; and to organize a division of child hygiene in the State board of health under the existing law. By a legislative act in 1919 a division of child hygiene had been created for the State, but no appropriation was provided for effecting the organization or for its cooperation with other organizations.

Cooperation with Other Organizations.

It was realized that efficient results could be obtained only by coordinating all existing health agencies that were working or contemplating working in child hygiene with the field force of the United States Public Health Service. Accordingly, conferences were held at the start with representatives of various volunteer organizations. These conferences resulted in outlining a policy which gave all organizations definite functions delimiting the field of their special activities, and securing their agreement to cooperate through the Public Health Service with the constituted health authorities of the State.

It became the duty of the Missouri Tuberculosis Association to detail field agents for organizing purposes and to assist in State-wide publicity.

The American Red Cross agreed to furnish nurses for district, clinic, and health center work.

The Agricultural Extension Service of the University of Missouri detailed its home demonstration agents to conduct or assist in the conduct of nutrition clinics in schools.

The Parent-Teachers' Association lent valuable aid in volunteer work in the schools, assisting the school workers.

The W. C. T. U. furnished the division with a multigraph outfit and developed, in connection with the work of the child hygiene division, the "Big Sister to the Expectant Mother" idea.

The medical and dental professions gave valuable aid in the physical examinations of school children and donated time to clinics and health center work.

In a number of local communities central health committees were formed. These committees were composed of local representatives of State organizations of a number of nonofficial health agencies. The success of the work has largely been due to the help secured through these committees.

UNITED STATES PUBLIC HEALTH SERVICE.

The field force of the Public Health Service, though subject to change from time to time, as circumstances warranted, in the main comprised—

One commissioned medical officer in charge of child hygiene field investigations in the State, who served as director of the division of child hygiene, State board of health.

Seven acting assistant surgeons (women physicians trained in child hygiene).

Six public health nurses.

Four school workers.

Eight schedule takers (field investigators in house-to-house canvass).

AMERICAN RED CROSS.

Cooperating actively with the Public Health Service, the southwestern division of the American Red Cross placed at the disposal of the service its public health nursing service. Great effort was made by this organization to place nurses in the field. A canvass of the nursing situation showed only four public health nurses in the State. It is worthy of note that by the end of the fiscal year there were on duty throughout local communities 20 Red Cross nurses, specially trained in public health work, devoting all their time to child hygiene activities. This organization has detailed to the State board of health a highly trained public health nurse as State supervisor of nurses. It has also detailed four well-qualified nurses as district supervisors.

MISSOURI TUBERCULOSIS ASSOCIATION.

The secretary of the Missouri Tuberculosis Association acted as associate State director of the division of child hygiene of the State board of health. This organization detailed three of its personnel as field organizers and furnished an experienced field investigator for a county survey in rural schools.

UNIVERSITY OF MISSOURI.

Through its agricultural extension service, the University of Missouri rendered valuable aid in conducting nutrition clinics for children. The chiefs of home economics and extension economics divisions acted as general supervisors over their own field forces, which cooperated actively with the Service. Fourteen home demonstration agents, trained in nutrition work, were detailed in as many counties. Four nutrition specialists acted as district supervisors, giving attention to special problems.

PARENT-TEACHERS' ASSOCIATION.

The parent-teachers' associations gave financial aid to local communities and did valuable work assisting the school workers.

WOMAN'S CHRISTIAN TEMPERANCE UNION.

Through the Woman's Christian Temperance Union great aid is being rendered communities. It is agreed that, through its local union, layettes and comfort kits would be furnished on application to expectant mothers. Through the good offices of the president, a multigraph was furnished the State division of child hygiene.

MEDICAL AND DENTAL PROFESSIONS.

Through the central health committees the services of members of these professions were secured for assisting and supplementing the work of the service physicians in school examinations and health center work.

LOCAL CHILD HEALTH COUNCILS.

These councils cooperated closely with the field parties in all activities. They were instrumental in establishing health centers on a permanent basis and in employing public health nurses.

Scope of the Work.

On account of the extent of territory to be covered and limitation of funds for the project, the investigations were confined to those localities which offered the best prospects of establishing the work on a self-sustaining basis. It was contemplated that investigations would be made only in cities of 3,000 population or more, exclusive of the largest three cities of the State. No attempt was made to carry on investigations in rural districts except in isolated instances hereinafter reported.

From the inception of the work to June 30, 1920, the projects undertaken were as follows:

- (1) Field investigations, consisting of house-to-house canvass to determine the percentage of birth registration, and to obtain data relative to the sanitary condition of the home, to milk supply, relative income, and the relationship between prenatal influences and maternal and infant mortality.

- (2) School hygiene studies, consisting of monthly height and weight taking, physical examinations, followed by an attempt to secure the cooperation of parents for the correction of physical defects, and the holding of nutrition clinics for underweight children.

- (3) Establishing health centers for prenatal, infant, and pre-school clinics.

- (4) Placing the work on a permanent basis by obtaining at local expense one or more community public health nurses and school nurses and by forming community health councils.

- (5) Public health education by lectures, exhibits, and the distribution of literature and newspaper feature articles.

General Results.

To date (October, 1920) 25 cities have had a school survey, consisting of height and weight taking, physical examinations (with at-

tendant follow-up work to obtain the correction of physical defects), and the establishment of nutrition clinics.

In 21 cities, health centers are being, or have been, established and equipped, and funds have been appropriated for the employment of a permanent community nurse.

Four counties were selected as centers of intensive investigations, the staff acting primarily as a whole-time county organization. Each unit consists of a physician trained in public health work, and especially child hygiene, two or more public health nurses—nutrition specialists—and trained school workers and field investigators. In these counties the full program has been commenced.

JASPER COUNTY.

The personnel in Jasper County was as follows: One assistant surgeon, on duty in this county as county health officer, acted as local director; one acting assistant surgeon; one public health nurse; one school worker; and two field investigators.

Investigations were carried on in three cities in this county, namely, Joplin, Carthage, and Webb City. School surveys with its attendant follow-up work were made in all three cities.

A complete house-to-house canvass was made in Webb City and in two representative school districts in Joplin. The investigations and demonstrations led to the establishment of two health centers and the employment of three public health nurses.

GREENE COUNTY.

The personnel was as follows: The acting assistant surgeon assigned to direct the field investigations in this county also served as the county health officer and was assisted by one public health nurse, one school worker, and two schedule takers. Through the excellent cooperation of the local medical profession, an intensive school survey was made in the city of Springfield and of the greater part of the rural schools of the county.

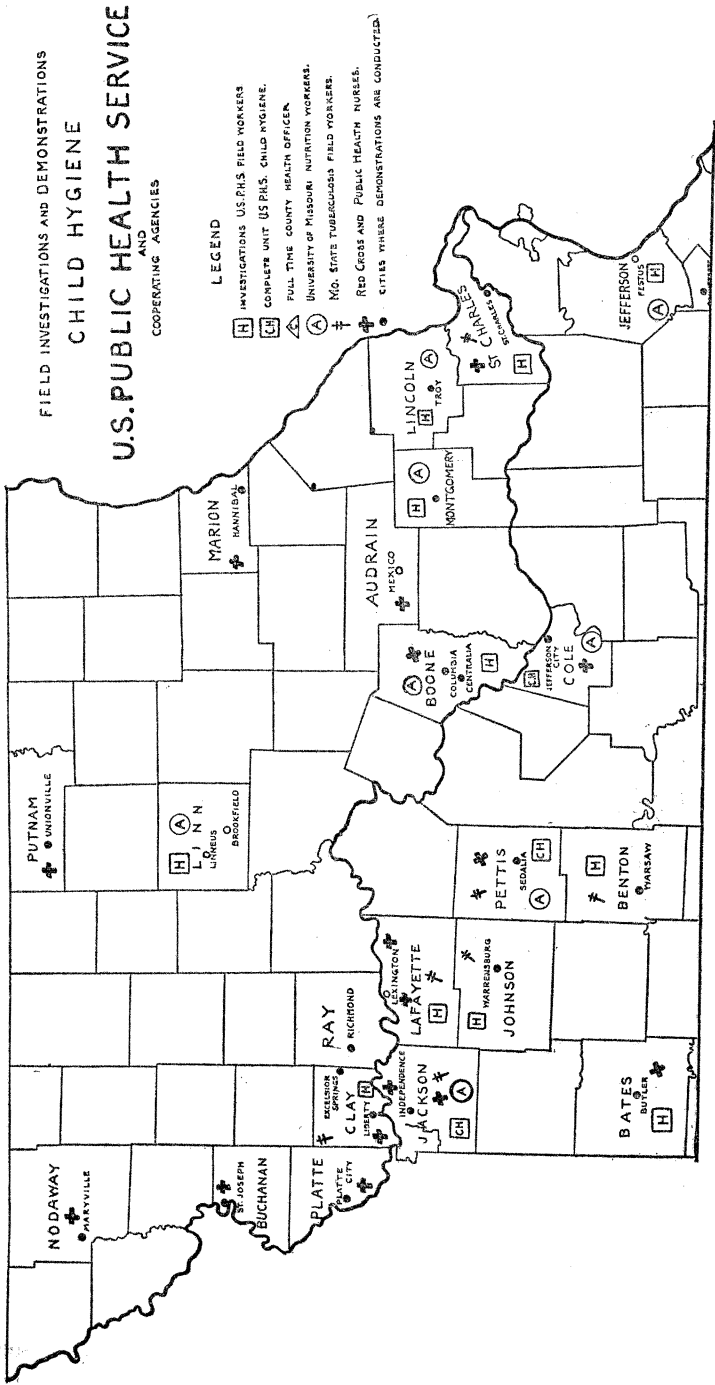
A house-to-house canvass was made in two representative school districts.

A "baby-week" demonstration was also held, and a baby health center is now in operation in Springfield.

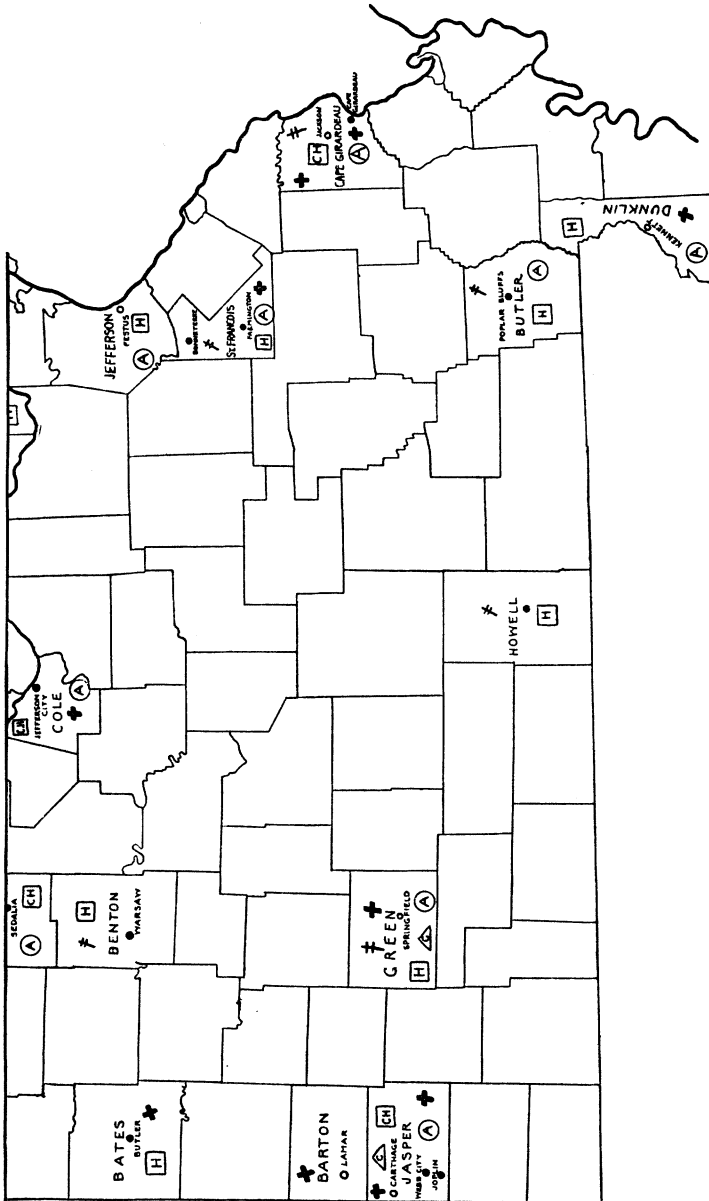
This county, a very progressive one, raised \$30,000 for health work, a great part of which has been spent in child health conservation.

CAPE GIRARDEAU COUNTY.

A unit was detailed to this county with headquarters in the largest city. The personnel was as follows: One acting assistant surgeon; one school nurse; three schedule takers; and one public health nurse.



A house-to-house canvass was made in Cape Girardeau City and one in Jackson, the county seat. At the beginning of the work the school authorities had in their employ a school nurse. The demon-



stration convinced the health committee of the desirability of securing another nurse. Since the close of the schools the two nurses have been engaged in follow-up work and health center activities.

PETTIS COUNTY.

A unit was established with headquarters in Sedalia and with the following personnel: One acting assistant surgeon, one public health nurse, one school worker, and three schedule takers.

The acting assistant surgeon also had supervision of activities in the surrounding counties.

Activities were carried on in Sedalia, Warrensburg, and Lexington, and consisted of school surveys, schedule taking, and the formation of health centers. In Lexington and Sedalia community health centers were formed by the local committee and a public health nurse was employed. In Warrensburg funds were appropriated for the employment of a whole-time school nurse.

SCHEDULE TAKING.

In those cities where Public Health Service units made intensive investigations, field investigators, i. e., schedule takers, were detailed to make a complete house-to-house canvass of the town and, in some instances, to make a canvass of the homes in two or more representative school districts. The house-to-house canvass was made to determine, if possible, the percentage of birth registration and to obtain data relative to the sanitary condition of the home, the amount of milk used, and relative income, with its bearing on the physical condition of the children and infant mortality. Special studies of the relationship between prenatal influence and infant mortality are also under way. This procedure served as an excellent health education movement; parents displayed much interest in the work and, as a rule, unhesitatingly cooperated with the investigators in giving correct information. Valuable data were obtained, which led to better health supervision of large numbers of infants and young children. Many instances are recorded where improper habits in eating and sleeping were corrected, much to the benefit of the children.

In many cases the schedule taking was the entering wedge for the school and community nurse.

SCHOOL HYGIENE.

School hygiene work was started in those cities that seemed most nearly ready to undertake the work, and where public sentiment was in accord with the movement, but where no organized work had been done.

On request of the school authorities a field party, consisting of a physician, a public health nurse, one or more school workers, and a nutrition specialist, was detailed to make the survey in the given city.

The work usually was started by weighing and measuring the children in the school. This was an easy approach, as it did not antagonize anyone and served to interest the children and their parents in other forms of health work. The results of the weighing and measuring were made known to the children, and friendly rivalry ensued as to which child would reach average weight first. Talks were given to the children and to parent-teacher associations, explaining that when a child was underweight it was due to some underlying condition which might be a physical defect or faulty habits of living. Mothers were particularly invited to attend these lectures and informal conferences. It was made clear to them that an effort would be made to determine the cause of malnutrition in individual cases. They were requested to allow the children to be physically examined for this purpose and were invited to be present at such examination.

In a few instances the physical examinations were made by Service representatives, but as a rule they were done by local physicians so as to enlist their interest and cooperation and insure the permanency of the work. The local physicians and dentists were divided into teams consisting of two physicians and one dentist, one team working each day. In this way the examinations were made in a short time.

After the examinations were completed notices were sent to the parents regarding the results, with the suggestion that the physical defects, where such were found, be given attention by the family physician or dentist. An effort was then made to have the community employ a public health nurse to do the follow-up work. This work consisted chiefly in visiting the homes of the school children and explaining the necessity for having the physical defects remedied, and advising the parents regarding the sanitary needs of the homes, and other health matters. During the visit the nurse explained in detail to the parents the harmful results of uncorrected physical defects, advising them to consult their family physician, or at least attend the clinics. Local physicians volunteered their services at these clinics, where treatment and advice in the matter of correction were given. In one city, where many cases of trachoma were found in the schools, the only eye specialist in the city volunteered to watch every suspected case all summer and to see each child sent to him once for every two weeks. He also offered to treat free any cases that could not afford to pay for the treatment.

In every community where a school survey was made the physicians and parents gave excellent cooperation, and in the majority of cities community nurses were employed for permanent work. About 25 nurses have been employed as a result of this campaign.

The cities in the following list were selected for school medical inspection studies and the establishment of nutrition clinics for undernourished children:

City.	Number examined.	Total number of defects found.	City.	Number examined.	Total number of defects found.
Springfield.....	4,816	7,936	Warrensburg.....	900	2,023
Joplin.....	1,885	4,033	Montgomery City.....	287	561
Independence.....	2,128	3,401	Cape Girardeau.....	568	1,316
Sedalia.....	2,782	6,433	St. Charles.....	1,195	3,430
Lexington.....	979	3,036	Total.....	17,561	31,823
Bonne Terre.....	803	1,340			
Jefferson City.....	1,215	1,291			

The defects noted are the commoner gross defects such as could be discovered in classroom examination. They include defective vision, hearing, teeth, nasal defects, enlarged tonsils, adenoids, skin eruptions, etc. The returns were incomplete at the time the table was compiled; the figures are based on the data which were available. A number of these studies and clinics continued in operation throughout the school year.

One of the outstanding features of the work has been the inauguration of the "mother-child" nutrition clinics for the use of undernourished children.

When the school children in several cities were weighed and measured nearly half were found to be noticeably underweight. In arriving at a decision as to what constituted an underweight child the table of heights and weights as prepared by Dr. Thomas S. Wood, Teachers' College, Columbia University, was used as the standard. A child who was found to be 2 or more pounds below the average weight for height and age, according to this table, was considered underweight.

The undernourished child is one who is from 7 to 10 per cent or more under the average weight for height and age according to the same table. He is not only below normal weight for height and age, but fails to gain at the normal monthly rate. During the period 8 to 12 years of age a boy should gain one-half pound per month; at 12 to 14 years of age he should gain three-fourths pound per month; and from 14 to 16 years he should gain 16 ounces per month. Undernourished children fail to make these gains and are, as a rule, pale, dull, listless, and undersized. They become fatigued easily, and at times have no ambition for work or play. One of the most striking results of such a condition in children is their lack of resistance to acute diseases; and the majority of them suffer from catarrhal conditions of the respiratory tract.

The underweight children were examined and questioned in an effort to find the cause of the underweight. It was found that

these children had, besides physical defects, many faulty habits, such as late bed-time hours, and insufficient or improper food consumption, which accounted to a great extent for the fact that they were not gaining in weight normally. It was considered useless to try to correct these habits without the cooperation of the parents, and plans were worked out to secure this cooperation. Mothers of the underweight children were invited to the school building to confer with the nutrition worker. Instead of the usual class work in nutrition, individual mother-and-child clinics were held. The nutrition worker sat down with the child and its mother and had a confidential talk. Questions were asked to bring out the living habits of the child, and advice was given regarding the correction of these habits. By questioning the child in the presence of its mother, more reliable information was obtained. Experience has shown that in the individual talks, the mother would give information and ask questions that she would not do in the presence of other women. Advantage was taken of such opportunity by the nutrition worker to call the mother's attention to any physical defects that had been found by the physician on examination, and to impress upon her the necessity of having them corrected.

Special nutrition clinics were inaugurated and maintained during the school year in the following cities: Jefferson City, Montgomery City, Linneus, Independence, Elsberry, Bonne Terre, Desloge, Leadwood, Festus, Farmington, Liberty, Excelsior Springs, Troy, Cape Girardeau, Jackson, Gumbo, Springfield, and Joplin.

The findings of these clinics are summarized in Table I. This table shows the more common physical defects and faulty dietary habits observed in the children attending these clinics.

TABLE I.—*Physical defects and faulty dietary habits observed in children attending nutrition clinics in the cities.*

Number attending clinic.	Physical defects related to nutrition.						Dietary faults.		
	Mouth breathers.	Defective tonsils.	Adenoids.	Defective teeth.	Pale color.	Fatigue posture including winged scapulae.	Use of coffee.	Inadequate milk.	Excessive use of meat.
4,076	1,085	1,567	553	2,229	1,758	2,516	711	1,270	648

Table II shows that the majority of the children attending the nutrition clinics, who followed the advice given by the nutrition workers, gained in weight. Those children who did not gain were, in most instances, children who were absent during the month on account of sickness.

TABLE II.—*Record of loss or gain of underweight children for two or more months.*

City.	Number of schools.	Number of pupils.	Loss.	Gain 2 rounds or more per month.	No change.
Jefferson City.....	4	161	39	108	14
Troy.....	1	77	6	68	3
Bonne Terre.....	2	66	5	56	5
Literly.....	1	47	11	32	4
Montgomery City.....	1	67	24	40	3
Cape Girardeau.....	3	167	36	122	9
Felsberry.....	1	105	27	64	14
Springfield.....	5	410	79	291	40

RURAL SCHOOL SURVEYS.

Safeguarding the health of rural school children is yet a great unsolved health problem. Where physical examinations have been made, results show that the percentage of defects is as great, at least, as it is in the city schools.

The country child has the advantage of fresh air and outdoor life, but he generally sleeps with closed bed room windows the greater part of the year.

On evidence obtained by questioning mothers of rural children, it was found that, in the majority of cases, well-balanced meals were rare. The diet of these children, especially in the fall and winter months, consists chiefly of some form of pork, hot biscuits, gravy, and sorghum. The dietary improves somewhat during the summer when homegrown fresh vegetables are obtainable.

Such defects as adenoids and decayed teeth are given little attention, because they never have been brought to the attention of the parents, and also because of the quite common lack of facilities for their correction. Plans are now being formulated to be tried out in one or more counties this fall.

Although the original program did not contemplate investigations in strictly rural districts, owing to repeated requests a survey was made among rural schools in two counties.

In Howell County, through the cooperation of the local physicians, 556 children were weighed and measured. Of these, 279 were found to be 7 per cent underweight, and 184, 10 per cent underweight. These figures are based on available standards. Of the underweight children, all were requested to attend the nutrition clinic, and 226 pupils took advantage of the opportunity. These were given a very careful examination with special reference to defects affecting nutrition.

The prominent defects noted among these children are pale color, winged scapula, and flabby muscle. These defects are symptomatic of undernourishment, which is due either to inability to properly

assimilate food or to the injection of too little food. No attempt was made to determine the apparent anemia by laboratory tests, but pale color was considered partially substantiating clinical evidence. Fatigue posture means extreme round shoulders and flat chest with prominent scapulæ. Flabby muscle was determined by manual examination. The muscles do not have the tone of muscles of normal healthy children. They are soft and do not contract with the hardness of the normal muscle.

These studies are summarized in Tables III and IV.

TABLE III.—*Underweight by grade and sex. Rural survey; Howell County, Mo.*

	Number weighed.	Seven per cent underweight.	Ten per cent underweight.
Total.....	556	279	184
Male.....	263	111	65
Female.....	293	168	119
Grades 7 and 8:			
Male.....	50	18	10
Female.....	63	29	20
Total.....	113	47	30
Grade 6:			
Male.....	23	6	4
Female.....	40	25	20
Total.....	63	31	24
Grade 5:			
Male.....	56	25	13
Female.....	48	27	22
Total.....	104	52	35
Grade 4:			
Male.....	32	14	7
Female.....	30	15	14
Total.....	62	29	21
Grade 3:			
Male.....	22	10	6
Female.....	33	19	13
Total.....	55	29	19
Grade 2:			
Male.....	34	13	7
Female.....	35	25	15
Total.....	69	38	22
Grade 1:			
Male.....	46	25	18
Female.....	44	28	15
Total.....	90	53	33

TABLE IV.—*Summary of medical examination of children attending nutrition clinics. Rural survey, Howell County, Mo.*

Defect.	Number examined.	Grade.						
		7 and 8	6	5	4	3	2	1
Total examined.....	226	36	29	45	29	25	34	46
Pale color.....	123	22	15	24	4	17	11	30
Winged scapulae.....	121	16	12	26	5	16	18	28
Flabby muscles.....	130	21	10	22	8	18	20	31
Flat chest.....	33	8	.....	15	7	2	1	.....
Fatigue posture (extreme).....	10	4	1	4	1	.....	.....	.....
Mouth treatling.....	37	10	3	16	4	1	2	1
Adenoids.....	13	2	1	2	4	.....	2	2
Nasal obstruction.....	6	1	1	3	.....	.....	.....	.....
Rhinitis (chronic).....	18	1	.....	.....	.....	1	5	11
Enlarged tonsils.....	95	12	6	23	6	14	15	19
Defective vision.....	54	8	6	3	4	4	13	16
Defective hearing.....	7	3	1	3	.....	.....	.....	.....
Pulmonary defects.....	30	6	1	8	3	4	1	7
Heart murmurs.....	12	8	.....	3	.....	1	.....	.....
Valvular disease.....	6	3	.....	2	1	.....	.....	.....
Enlarged thyr. id.....	24	4	6	4	3	2	1	4
Enlarged cervical glands.....	19	.....	.....	.....	.....	3	6	10

Table V give the results of physical examinations made during a survey of the rural schools of Greene County.

TABLE V.—*Result of physical examinations of 1,767 children in rural schools of Greene County, Mo.*

Defective vision:		Skin eruptions:	
One eye.....	76	Scabies.....	18
Both eyes.....	122	Ringworm.....	1
Defective hearing:		Acne.....	16
One ear.....	20	Pulmonary diseases:	
Both ears.....	33	Tuberculosis.....	0
Defective teeth:		Nontuberculous.....	30
Decayed teeth.....	797	Heart affections.....	40
Missing teeth.....	208	Orthopedic diseases.....	12
Riggs' disease.....	14	Spinal diseases.....	1
Use of toothbrush.....	842	Special diseases:	
Mouth breathing.....	330	Conjunctivitis.....	4
Nasal defects:		Blepharitis.....	1
Adenoids.....	103	Ptosis.....	1
Other defect.....	47	Flat chest.....	7
Throat affections:		Pigeon chest.....	3
Enlarged tonsils.....	604	Defective speech.....	2
Diseased tonsils.....	85	Corneal ulcer.....	1
Enlarged cervical glands.....	3	Chorea.....	2
Enlarged thyroid.....	10	Epileptic.....	1

It is interesting to note that more than one-half of the children attending the nutrition clinics were accompanied by one of the parents or by some adult relative. The majority of these promised hearty cooperation in respect to following the advice regarding proper food and securing the correction of physical defects.

CHILD HEALTH CENTERS.

The school investigations excited widespread interest, and a large number of the parents expressed the desire for their children of pre-school age to be weighed and measured. This resulted in the establishment of child health centers in a number of communities throughout the State for the proper supervision of the health of children under school age.

In establishing a child health center usually the first step taken was to form a central committee, consisting of a representative of each local organization assisting in the survey. To this committee was delegated the work of securing and furnishing two or more suitable rooms in a central location and perfecting the necessary financial arrangements. In some instances the local Red Cross donated the use of their rooms, and in others rooms were secured in the county courthouse or city hall free of rent.

Parents were invited to bring the babies and children of preschool age to the centers for examination and advice at certain hours on designated days of the week. The work here was similar to that done in the schools, being under the direction of a physician assisted by the community nurse. In some communities clinics were organized, both medical and dental, for advice and treatment of the children who were seen at the health center or in the home by the visiting nurse. These were open to all classes of society. Furthermore, the various cities established the clinics that seemed most needed in the community, such as dental, trachoma, orthopedic, etc.

Wherever a child health center was established, the community nurse was instructed to start classes for mothers and expectant mothers, teaching them how to care for themselves and how to care for their babies.

Child health centers were organized by representatives of the United States Public Health Service in the following cities: Independence, Lexington, Sedalia, Cape Girardeau, Jackson, Springfield, Joplin, and Kennett.

As a result of these studies, and through the efforts of the local health councils, child health centers have been opened in the following cities: Butler, Platte City, Carthage, Hannibal, St. Charles, Liberty, and DeKalb.

BIRTH REGISTRATION.

For the purpose of improving birth registration in the State and securing proper care for mothers both before and after confinement, a card was prepared and distributed to physicians, nurses, social workers, and representatives of various volunteer organizations, with the request that copies be handed to expectant mothers with the

advice that they be filled out and returned to the director of the division of child hygiene, State board of health. The following information was requested:

Father's name
Father's age
Father's address
Mother's name
Mother's age
Date baby is expected, or
Date of last menstrual period

On receipt of this information, an expectant mother is placed on the mailing list to receive from time to time one of a series of prenatal letters which has been prepared instructing her in regard to the precautions to be observed during the various stages of pregnancy.

The last prenatal letter contains a second blank requesting the following information:

Baby's name
Date of birth
Father's name
Father's address
Name of attending physician

When this blank is filled out and mailed to the director of the division of child hygiene, the mother is placed on the list to receive a series of lessons on the care of the baby, which was prepared for distribution in this manner. There is strong ground for the belief that the interest of the average mother will be more readily attracted and retained by periodic and timely letters than by the use of a baby book. This procedure has met with great success and returns are coming in in greater numbers than was expected. All reported births are referred to the State registrar who in turn communicates this information, together with the name of the attending physician in the case of births which have not been reported, to the local registrars. By this means it is hoped to arouse the mothers of the State to a sense of the importance of birth registration from the standpoint of their children, and to secure their assistance in causing a more general observance of birth reporting by the attending physicians. In fact, in Missouri, as in a number of other States, it is extremely difficult to bring about better birth reporting through resort to the courts. It is felt that when the mothers of the State realize the great laxity of physicians in this respect it will not be necessary to secure legal assistance in order to bring about great improvement in birth registration.

LITERATURE DISTRIBUTION.

On account of lack of funds, the State board of health has been unable to publish bulletins or other educational matter. Various

publications issued by the United States Public Health Service bearing on child hygiene have been distributed by nurses and other workers. These publications are distributed at all child health centers, and the demand has been greater than the supply. Many requests have come from school authorities for bulletins dealing with diseases of childhood and the correction of physical defects. At the various exhibits held during the last few months special interest was manifested in the "Keep Well" series and the standard forms for field investigators.

PUBLICITY.

During the year numerous requests have been received from medical societies and other organizations for addresses and papers on the subject of child hygiene. In each case, a representative of the Public Health Service was detailed to comply with the request. Lectures also were given before the State meeting of the League of Women Voters, the class in preventive medicine of the University of Missouri, the class for county health officers, and many parent-teachers' associations.

In every community where child hygiene work was commenced cooperation of the local newspapers was secured and editorials and special articles were provided.

Future Work.

Heretofore much has been written regarding child hygiene, from a theoretical standpoint, and a great deal of time and money have been spent in projects and publicity without leaving any definite results. This experiment in Missouri has shown that definite and permanent results can be accomplished. The work, so well started, should not be allowed to drag on account of lack of funds or material. Some of the work started is still in a formative stage and needs the assistance of trained workers to develop it. It is desirable to continue school investigations with special reference to height and weight, in order to arrive at a definite standard which will be applicable to children in Missouri and the Middle West.

From the survey it is noted that approximately 50 per cent of the children are under normal weight and are considered undernourished, and much more nutrition work is required throughout the State. Trachoma is another serious problem in the schools. An early survey showed that about 9 per cent of the population in the counties in southeast Missouri has trachoma. In one town in the northwestern part of the State, where trachoma was not suspected, our investigators found 158 cases of trachoma among 979 children

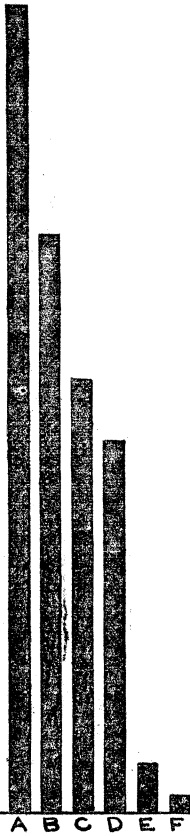
of the better class, or 16.1 per cent of those examined. This finding was corroborated by eye specialists who have had experience in diagnosing and treating trachoma.

Appendix.

A. Physical defects observed in school children of 10 cities.

Physical defects.	Joplin.	Sedalia.	Cape Girardeau.	Montgomery City.	Warrensburg.	Independence.	Greene County.	Eonne Terre.	Jefferson City.	Springfield.
Defective vision:										
One eye.....	50	74	72	27	80	82	76	38	40	120
Both eyes.....	212	168	117	40	125	570	122	251	103	364
Defective hearing:										
One ear.....	60	68	50	19	16	43	20	40	51	42
Both ears.....	120	56	12	7	4	19	33	14	24	50
Defective teeth:										
Decayed.....	1,002	2,040	388	181	675	613	797	453	415	2,625
Missing.....	197	419	87	42	30	127	208	106	79	256
Hutchinson's teeth.....	1		2	2				2	6	2
Rigg's disease.....	23		2			1	14		3	8
Mouth breathing:	687	714	105	120	90	436	330	90	166	1,310
Nasal defects:										
Adenoids.....	421	633	117	3	134	224	103	30	86	171
Other defects.....	12	11	8		210	41	47	2	4	43
Throat affections:										
Enlarged tonsils.....	906	1,303	202	110	224	700	604	284	220	1,997
Diseased tonsils.....	13	92	20		166	80	85	4	5	299
Enlarged cervical glands.....	5	33	6		6	1	3	2	1	69
Enlarged thyroid.....	10	6	9	1	29	27	10	2	7	44
Skin eruptions:										
Scabies.....	39	27	15	1	8	17	18	3	4	27
Ringworm.....	7	2		1	5	12	1	1	2	3
Acne.....	33	52	17	6	7	12	16	2	3	77
Pulmonary diseases:										
Tuberculosis.....	7	2	2			4		1	8	46
Bronchitis.....	8	53	15					1		
Others.....						3	30			70
Heart affections.....	21	173	12		25	95	40	2	19	132
Orthopedic diseases.....	82	17	12		13	54	12	4	9	53
Spinal diseases.....	11	11	12		3	2	1			4
Special diseases:										
Conjunctivitis.....	19	345	2		90	113	4	2	7	17
Suspected trachoma.....	28	60	21		31	23			6	55
Strabismus.....	8	6	4			17			2	9
Blepharitis.....		41		3	10	52	1			7
Ptosis.....	4		1				1			3
Flat chest.....	1	12				4	7	4	3	14
Pigeon chest.....	1	14	1		4	6	3	1	1	9
Defective speech.....	55		4	1	37	22	2		13	5
Cleft palate.....	4	1								1
Chorea.....	5		1			1	1	1		2
Ricketts.....	1								2	
Corneal ulcer.....					1		1			
Hairlip.....									2	1
Total.....	1,885	2,782	568	287	900	2,128	1,767	806	1,215	4,816

B. CHART SHOWING THE PERCENTAGE OF CERTAIN PHYSICAL DEFECTS OBSERVED DURING A SCHOOL SURVEY OF ONE REPRESENTATIVE CITY.



A-TOTAL EXAMINED 2,782	
DEFECT	PERCENT
B-DECAYED TEETH	73
C-UNCLEAN TEETH	53
D-ENLARGED TONSILS	46
E-DEFECTIVE VISION	6
F-DEFECTIVE HEARING	2

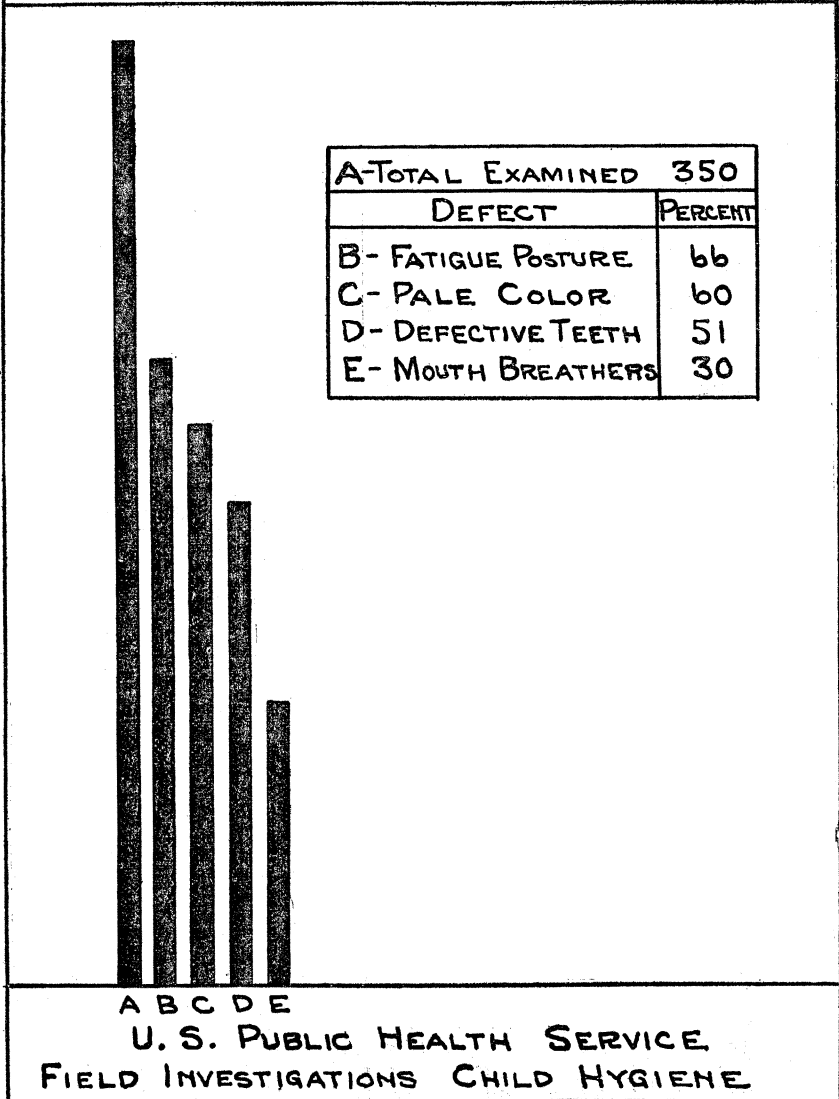
A B C D E F

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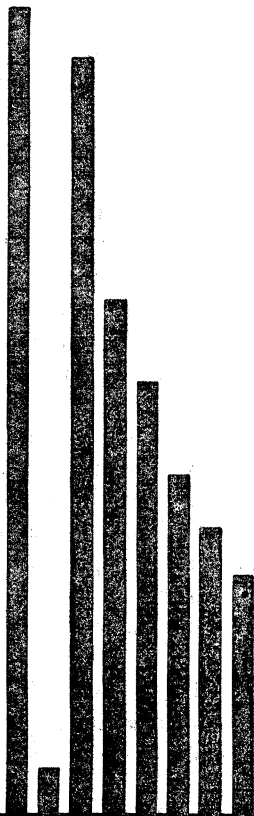
C. Contributing causes of malnutrition and associated conditions observed in children attending nutrition clinics.

Contributing causes of malnutrition and associated conditions.	Montgomery City.	Independence.	Lincolnton.	Jefferson City.	Bonne Terre.	Elsberry.	Gumbo.	Jackson.	St. Francis County rural school.	Cape Girardeau.	Troy.	Excelsior Springs.	Liberty.	Farmington.	Fostus.	Leadwood.	Desloge.	Springfield.
Month breathing.....	78	46	130	99	60	81	2	16	15	78	66	11	17	75	39	52	30	169
Defective tonsils.....	53	49	185	312	39	79	3	24	37	18	32	12	29	140	103	47	91	229
Adenoids.....	70	12	250	11	32	77	3	4	22	19	75	7	19	133	141	23	25	143
Defective teeth.....	77	120	360	392	39	143	15	55	57	133	75	27	82	183	130	51	120	341
Winged scapulae.....	62	120	360	222	59	47	13	76	67	190	88	19	36	301	180	126	235	397
Pale color.....	72	65	310	152	42	18	24	6	61	12	18	23	7	196	195	126	223	144
Poor posture.....	12	75	380	222	60	47	2	12	6	12	86	15	106	7	142	126	235	402
Use of coffee.....	21	19	235	67		47		22	11	38	37	6	6	38	38			
Infected milk.....	25	106	250	180		39	26	19	51	17	74	29	15	125	106		134	
Too much meat.....	30	10	168	123		49	12	10	32	98	74	5	9	75	81			
Too much sugar.....	35	48	168	101		27	4	12	7	24	18	5	7	27	37			
Discontinued coffee.....	16									18				3				
Using milk.....	24									36			2	4				
Using eggs.....	21									7								
Cutting down sweets.....	17																	
Number attending clinic.....	120	273	500	320	133	192	38	85	147	225	119	50	198	421	221	126	249	661

D. CHART SHOWING THE PERCENTAGE OF
CERTAIN PHYSICAL DEFECTS OBSERVED
IN UNDERNOURISHED CHILDREN



E. CHART SHOWING THE FAULTY DIET
OF UNDERNOURISHED CHILDREN



A-TOTAL EXAMINED		350
DIET		PERCENT
B-BALANCED		6
C-UNBALANCED		94
D-LACK FRUIT AND VEGETABLES		64
E-INADEQUATE MILK		54
F-EXCESS MEAT		42
G-EXCESS SUGAR		36
H-COFFEE DRINKERS		30

A B C D E F G H

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